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Summing up the principal changes which have occurred in the evolution of *Anoplotherium* from *Dacrytherium*, I emphasize the following: 1. Increase in height of the crowns of the upper molars, and the reduction of the metaconid of the lower molars, this division of the metaconid is found in an incipient condition in young jaws of *Dacrytherium*. Complete separation of the metaconid into two distinct cusps only occurs in some forms of *Anoplotherium*. 2. The hind foot of *Dacrytherium* is normal in structure, and has at least four toes, this is the primitive type of pes, from which the specialized foot of *Anoplotherium* has been derived.

**Note.**—In my “Notes on the Fossil Mammalia of Europe,” part III, AMERICAN NATURALIST, April, 1896, I find two mistakes, which should be corrected. On page 309, third and fifth lines from top, read *Adriotherium*, instead of *Adiotherium* as printed, and also page 310, eighth line from the bottom, read *Anoplotheriide*, in place of *Suillines*. —CHARLES EARLE.

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## BOTANY.<sup>1</sup>

**De Toni's Sylloge Algarum.**—Dr. De Toni<sup>2</sup> has recently issued the third volume of his *Sylloge Algarum*. It deals entirely with the Brown Algae or *Phaeophyceae*—the *FUCOIDÆ* as he calls them. A thousand species are described under one hundred and eighty genera, which are grouped into twenty-nine families. He divides the group into three orders, *Cyclosporinae*, (*Fucaceae*) *Tetrasporinae* (*Dictyotae*) *Phaeozoosporinae* (*Phaeozoosporae*).

*Splanchnidium rugosum* the interesting plant which after careful study was placed by M. O. Mitchell and F. G. Whiting<sup>3</sup> in the *Phaeosporinae*, is retained in the *Durvilleaceae*, the fruit being described as a polysporous oogone. The general appearance of the plant and the structure of the conceptacles suggest a close relationship with the fucoids, but if the above investigations are to be accepted the plant

<sup>1</sup> Edited by Prof. C. E. Bessey, University of Nebraska, Lincoln, Nebraska.

<sup>2</sup> *Sylloge Algarum Omnium Hucusque cognitarum* by J. Bapt. De Toni, Vol. III, *Fucoidae*.

<sup>3</sup> On *Splanchnidium rugosum* Grev. the type of a new order of Algae, Phycological Memoirs, Pt. I. I., 1892.

bears zoospores in the conceptacles and not oogones, hence it must be placed in the *Zöosporinæ*.

The treatment of the *Zoosporinæ* is practically that of Kjellman in Engler and Prantl's, *Pflanzenfamilien*, except that the genera *Lithoderma* and *Arthrocladia* are placed in families by themselves, instead of in the *Ralsfiaceæ* and *Desmarestiaceæ* respectively, and that De Toni has included five small, mostly, monogeneric families, the *Phæothamniaceæ*, *Phæocapsaceæ*, *Hydruraceæ*, *Chromonodaceæ* and *Chromophytonaceæ* not mentioned by Kjellman. In all the *Zöosporinæ* except the above families the zoospores as far as known are laterally biciliated and are borne in some form of zoosporangia. In these families there are no zoosporangia and in at least a part of them the zoospores are not laterally biciliated and in general their relationship seems to be with the *Chlorophyceæ*. It seems more natural to place them, as Wille has with some of them, in the *Chlorophyceæ* next to their closely related genera.

The book is well arranged; priority in class, ordinal and family. nomenclature is strictly observed. It will be indispensable to the specialist in this line and a great help to the general student.—DE ALTON SAUNDERS.

**The Flora of the Black Hills of South Dakota.**—In a recent number of the Contributions from the U. S. National Herbarium (Vol. III, No. 8; issued June 13, 1896), P. A. Rydberg gives the results of his explorations (in 1892) of the Black Hills of South Dakota. The report, which includes about eighty pages, includes the following, viz.: Itinerary, Geography, Geology, Altitudes, Precipitation and Temperature, Floral Districts, General Remarks, and the Catalogue of Species. The plates are a Map of the Black Hills, *Aquilegia brevistyla*, *Aquilegia saximontana* and *Poa pseudoprattensis*. The floral districts recognized by the author are five, viz.: (1), the foothills and surrounding plains, (2), the Minnekata Plains, (3), the Harney Mountain Range, (4), the Limestone District, (5), the Northern Hills.

In summing up his discussion of the vegetation of these districts the author says, "From the foregoing can be seen what a varied flora the Black Hills have. There are found plants from the East, from the Saskatchewan region, from the prairies and table-lands west of the Missouri River, from the Rocky Mountains, and even from the region west thereof. In the foothills and the lower parts of the Hills proper the flora is essentially the same as that of the surrounding plains, with an addition of eastern plants that have ascended the streams. In the higher parts the flora is more of a Northern origin. Most of the plants

composing it are of a more or less transcontinental distribution, but often characteristic of a higher latitude. Some can be said to belong to the Rocky Mountain Region. The only trees of western origin are *Pinus ponderosa scopulorum*, and *Betula occidentalis*; the others are eastern, or transcontinental. The flora resembles, therefore, more that of the region around the Great Lakes than that of the Rockies."

It merely remains to say that the nomenclature and capitalization (*all* specific names decapitalized) of this interesting and valuable report are of the most advanced type.—CHARLES E. BESSEY.

### Trelease's Hickories and Walnuts of the United States.—

Dr. Trellease has rendered a good service to the botanists of the country by publishing (in the Seventh Annual Report of the Missouri Botanical Garden) the results of his studies of the Juglandaceæ of the United States, especially with reference to their winter characters. The species recognized are:

*Hicoria pecan* (Marshall) Britton.—Iowa to Southern Indiana, Kentucky, Louisiana and Texas, extending into Mexico.

*H. myristicæformis* (Michx. f.) Britton.—Arkansas to Alabama, Texas and Mexico, and in South Carolina.

*H. aquatica* (Michx. f.) Britton.—Virginia to Florida, around the Gulf to Texas, thence north to Arkansas and southern Illinois.

*H. minima* (Marshall) Britton.—Canada and Maine to Minnesota and Nebraska, south to Texas and Florida.

*H. glabra* (Miller) Britton.—Atlantic region from Massachusetts and Pennsylvania to Florida.—var. *odorata* (Marshall) Sargent.—Mississippi valley eastward, and from Canada to the Gulf.—var. *villosa* Sargent.—Missouri, on flinty hills.—var. *microcarpa* (Nuttall) Sargent.—Same range as var. *odorata*.

*H. alba* (L.) Britton.—Canada to the Great Lakes and Kansas, south to Texas and Florida.

*H. mexicana* (Engelm.) Britton.—Mexico, in mountains of Alvarez.

*H. laciniosa* (Michx.) Sargent.—New York and Pennsylvania to Iowa, Kansas and the Indian Territory.

*H. ovata* (Miller) Britton.—Canada to Minnesota, south to Florida, Kansas and Texas.

*Juglans cinerea* L.—New Brunswick to Dakota, Kansas, and the Mountains of Georgia and Alabama.

*J. rupestris* Engelm.—Texas, New Mexico and Arizona, extending into Mexico.

*J. californica* Watson.—Coast range of southern California.

*J. nigra* L.—Massachusetts to Ontario and Minnesota, south to the Gulf.

The paper is accompanied by twenty five plates of trees, bark, buds, leaves and fruits.—CHARLES E. BESSEY.

**Diseases of Citrous Fruits.**—This recently issued bulletin (8) of the Division of Vegetable Pathology, of the U. S. Department of Agriculture, prepared by W. T. Swingle and H. J. Webber is a valuable contribution to science as well as horticulture. The diseases discussed are Blight, Die-back, Scab, Sooty-mold, Foot-rot, and Melanose. Eight good plates (three colored) accompany the paper.

**Mulford's Agaves of the United States.**—In the seventh volume of the annual report of the Missouri Botanical Garden, Miss A. Isabel Mulford publishes a monograph of the genus *Agave* so far as the species native to or growing spontaneously in the United States, are concerned. Sixteen species and four varieties are recognized, distributed as follows :

*A. virginica* L.—Maryland to Florida, Indiana, Missouri and Texas.

*A. virginica* var. *tigrina* Engelm.—South Carolina.

*A. variegata* Jacobi.—Lower Rio Grande Valley, Texas.

*A. maculata* Regel. ?—southern Texas.

*A. schottii* Engelm.—southern Arizona.

*A. schottii* var. *serrulata* n. var.—Rincon Mts., Arizona.

*A. parviflora* Torrey.—Mts. of Arizona.

*A. lechuguilla* Torrey.—west Texas and east New Mexico.

*A. utahensis* Engelm.—Utah, northern Arizona, southern California and Nevada.

*A. deserti* Engelm.—southern California.

*A. applanata* Lemaire.—western Texas.

*A. applanata* var. *parryi* (Engelm.)—southern New Mexico to central Arizona.

*A. applanata* var. *huachuensis* (Baker).—Huachuca Mts., Arizona.

*A. shawii* Engelm.—southwestern California.

*A. palmeri* Engelm.—southeastern Arizona and southwestern New Mexico.

*A. asperima* Jacobi.—Spontaneous near San Antonio, Texas.

*A. americana* L.—Spontaneous in southern Texas.

*A. rigida sisalana* Engelm.—Naturalized in Florida.

*A. decipiens* Baker.—southeastern Florida.

*A. sp.*—Florida.

*A. sp.*—Texas.

It is with great pleasure that we observe the great reluctance of the author to establish new species; on the contrary she has refrained from giving names where most monographers would certainly have done so. Thus on page 96, after a description which might have been considered adequate, (at least by those who are fond of seeing their names cited in connection with specific names) the author says: "To avoid further confusion in nomenclature I refrain from giving a name to this plant until it is possible to obtain further data." We would commend this sentence to the careful consideration of a certain class of botanists who are apparently more anxious for their own "credit" than for the progress of the science.

Thirty eight plates, many of them half-tone reproductions of photographs, accompany this useful paper. If space permitted we should be glad to quote from the author's introductory discussion, which is full of interesting facts and suggestions; thus a case is cited in which the flower-stalk grew for twenty days at the average rate of two and three-fourths inches per day!—CHARLES E. BESSEY.

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## ZOOLOGY.

**Sense of Sight in Spiders.**—A detailed account of the experiments conducted by G. W. and E. G. Peckham for testing (1) the range of vision and (2) the color sense of spiders is published in a late volume of the *Trans. Wisconsin Academy*. The evidence offered by the authors is based upon a study of twenty species of *Attidæ*. This study has extended over eight successive summers, during which notes were made of many hundreds of observations. The movements and attitudes of the spiders of the group chosen are wonderfully vivid and expressive. The males, in the mating season, throw themselves into one position when they catch sight of a female, and into quite another at the appearance of another male. This power of expression through different attitudes and movements is of great assistance in determining not only its range of sight, but also its power of distinct vision.

The spiders were confined in boxes, the sides of which were marked off into inches. The bottom was of cotton cloth, the top of glass. Notes were taken of the distances at which prey was noticed, followed and captured. During their mating season the evidence was conclusive that these spiders not only see, but see clearly at considerable distance. The